DUST IN MUSEUM EXHIBITS

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We have long known that dust causes damage to artifacts. The basic information we tell museums about dust includes:

1. Dust is unsightly and makes your collection look poorly maintained.
2. Dust is abrasive on a microscopic scale due to tiny sharp mineral particles, such as quartz.
3. Dust contains pollens, skin cells, insect bits, and other organic matter that feeds biological growth.
4. Dust can be acidic.
5. Dust is "hygroscopic," meaning it attracts water and holds it against the surface of an object, contributing to staining, corrosion, and biological growth.

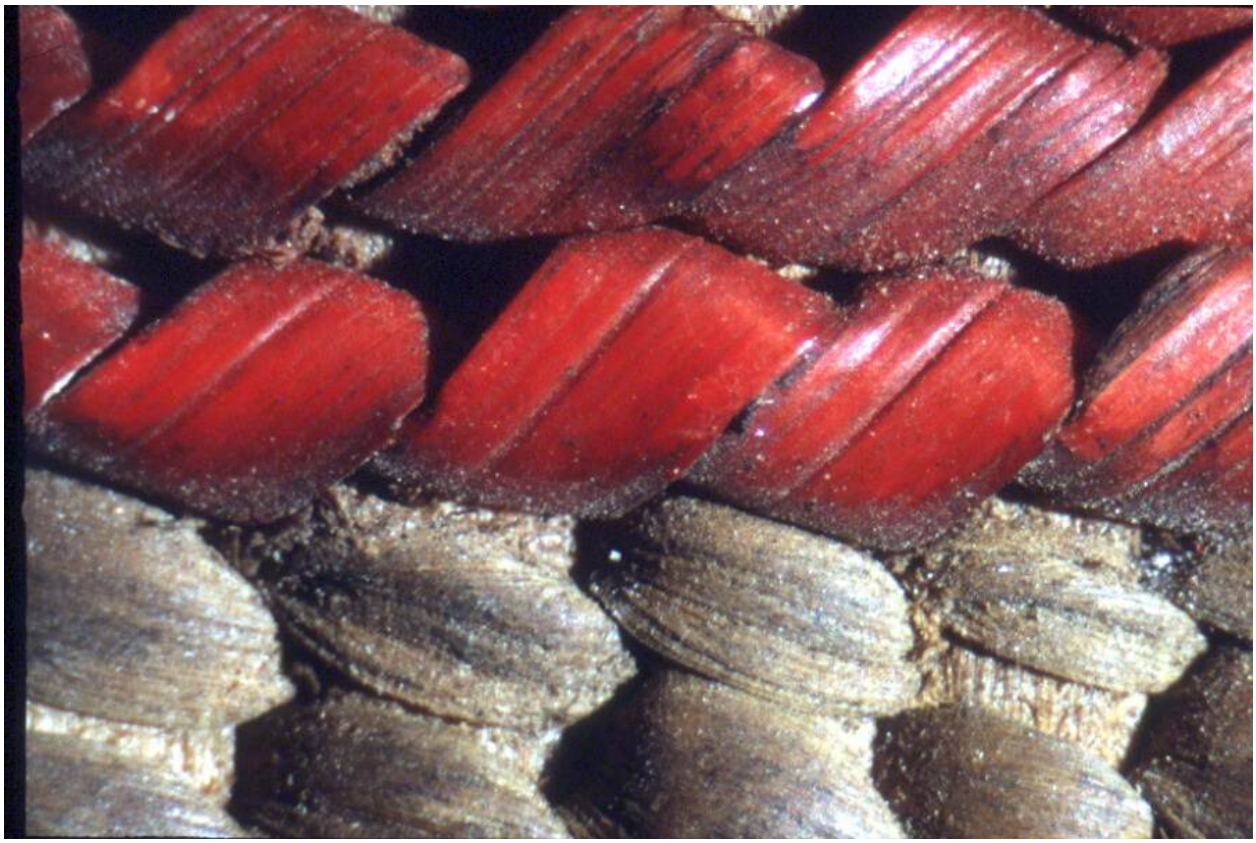

Image of dust in the fibers of a basket

A paper presented at the 2004 conference of the American Institute for Conservation described the forces that help dust stick to surfaces. One of these forces comes from sticky "exopolymers" made as a waste product of microbes (mainly bacteria). Accumulated dust provides more food for these colonies of microbes, and layer upon layer of "biofilm" forms, with the bottom layers becoming firmly adhered to the surface of the artifact. Spikes in humidity can encourage the initial growth and speed the growth of biofilms. Periods of low humidity after high ones can

stress the bacteria, and might cause them to produce even more sticky exopolymers. Yet another reason to try to keep our museum humidity levels stable!

Other articles have explored the role of visitors in creating coarse dust. Considerable amounts of dust enter the museum on visitors' clothes and shoes. Visitors are such a direct contributor to dust that one study showed dust amounts are cut in half for every 3 to 4 feet of distance between a visitor and an object. Fibrous dust, largely from clothing, accounts for only about 3% of the dust in exhibits. But since the particle size is large and visible, fibrous dust contributes significantly to the appearance of dustiness. This dust tends to be thickest at eye level. Dust entering on shoes is more concentrated closer to the entry, and in greater quantity under wet weather conditions than dry conditions. This kind of dust only rises about 4 or 5 inches off the floor. Some preventive measures can be taken. Placing objects in cases and further away from visitor traffic is one solution, of course, but is not always possible or desirable. Tightly sealed exhibit cases are better than ones with gaps, but require construction materials that do not off-gas harmful chemicals like formaldehyde and acid. Placement of mats in entryways significantly reduces the amount of dirt brought into the building on shoes. Vigorous air movement also increases the rate of dust coverage. Live performances and pathways through exhibits that involve sharp turns are examples of "dust raising" activities. Air movement from fans and open windows encourages dust circulation as well. Sometimes those factors are unavoidable, but strategic decisions can be made, particularly in relation to artifacts on open display. Cleaning of collections on exhibit should be scheduled at least once a year. Objects displayed in the open should be dusted annually. Artifacts in exhibit cases can be cleaned on a rotating schedule, with a few exhibit cases cleaned one year and others the next. After a few years, all cases will be done and the rotation can begin again. It is useful to have a map of exhibit galleries that can be annotated with notes and condition reports if needed.

Good housekeeping is divided into two levels of cleaning. Regular less-skilled cleaning can be done by janitorial staff or untrained volunteers, including daily vacuuming and regular dusting of furniture. Specialized cleaning of exhibits requires more skill. HEPA-filtered vacuums are especially helpful, since they release less dust back into the air than traditional vacuum cleaners. Closer to collections objects, vacuums with adjustable suction (such as a Nilfisk vacuum with a rheostat) are preferable. Dusting techniques that involve rubbing are abrasive to most surfaces on a microscopic level, and are best avoided if possible. Most items can be effectively cleaned with a soft paintbrush, gently fluffing the dust from the surface into the nozzle of a vacuum cleaner. For fragile surfaces, you may cover the nozzle with fine nylon netting, such as tulle, secured with a rubber band. Many a loose bead or detached fragment has been saved this way, and you will see sooner if the suction is too strong (hairs pulled from a taxidermy specimen, for example). Feather dusters can be helpful, but beware of any rough quills that could scratch surfaces and be sure to vacuum the feathers frequently to remove dust.


Image of dust accumulation on the wing of a taxidermy eagle.

Glass and plexiglass surfaces are often the first to show dust. The Sheldon Jackson Museum in Sitka, which has some of the cleanest exhibit galleries in the state, has found that cleaning glass with paper towels and a mixture of 1 part white vinegar to 4 parts water is as effective as any cleaner. Any cleaner should first by applied to a cloth, and then to the glass or plexi. Fine mist spray can penetrate cracks of exhibit cases and damage artifacts. Always be careful to let the case air out before closing because of the acetic acid or ammonia vapors released by some cleaners. Plexiglas requires special attention to prevent the plastic from fogging or scratching. The Alaska State Museum uses specially formulated commercial Plexiglas cleaners. One product is called Novus, and is available through online vendors. Novus 1 is for cleaning, Novus 2 is for removing fine scratches, and Novus 3 removes heavy scratches. Apply with a clean cotton rag. Good housekeeping is an important part of preventive conservation. Cleaning also gives you an opportunity to inspect your exhibits for problems such as bugs or shifted objects. While updating exhibits is often not in the budget, dusting costs little and freshens up appearances.

Five Defenses Against Dusty Exhibits

1. Sealed exhibit cases are the gold standard.
2. Establish regular dusting schedules.
3. Use extra floor mats near doors.
4. Avoid the use of fans and open doors or windows unless absolutely necessary.
   5. Avoid drastic swings in humidity levels.
5. Shut down the HVAC when cleaning dust out of the vents.

References:

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